

PATENT CLAIMS

1. A well assembly (2), for intervention of a subsea well (3) or a well head (4) by means of a wireline or a coiled tubing (7) connected to a tool or a toolstring (32), comprising lubricator means and an injector package (5),
- 5 - said injector package (5) is adapted to inject the wireline or coiled tubing (7) into the well (3) or well head (4), **characterised in that**
- said lubricator means (13, 29, 30) is adapted to be fitted in a lubricator package (6) and define a locking chamber via which said wireline or coiled tubing (7) is to be forwarded to the well (3) or well
- 10 head (4),
- said lubricator means (6) being adapted to be connected to said well head,
- said injector package (5), comprises an injector module (12), being adapted to be fitted to said well head,
- 15 and that the injector module (12) is adapted to forward said lubricator means (13, 29, 30) through it, when said packages are connected to each other and to the well head, for the purpose of injecting said wireline or coiled tubing (7) into the well (3) or well head (4).
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2. A well assembly according to claim 1, **characterised in that** it further comprises a well barrier package (11),
- said well barrier package (11) being adapted to be fitted onto said well head (4),
- 25 - said injector package (5) being adapted to be fitted onto said well barrier package (11),
- said lubricator package (6) being adapted to be fitted onto said injector package (5), and

that the injector module (12) is adapted to forward said lubricator means (13, 29, 30) through it, when said packages are connected to each other respectively and to the well head.

- 5 3. A well assembly according to claim 1 or 2, **characterised in** that the injector package (5) is provided with a separate, preferably self-standing, injector module (12) through which of the lubricator means (13, 29, 30) is forwarded.
- 10 4. A well assembly according to any one of claims 1-3, **characterised in** that the injector module (12) for forwarding the lubricator means (13, 29, 30) through it also is adapted to inject the wireline or coiled tubing (7) into the well (3) or well head (4).
- 15 5. A well assembly according to any one of claims 1-4, **characterised in** that the lubricator package (6) comprises a hydraulic cylinder device (25) for forwarding and retracting the lubricator means (13, 29, 30) through the injector module (12) between an upper position above the injector module and a lower position below the injector module.
- 20 6. A well assembly according to any one of claims 1-4, **characterised in** that the lubricator package (6) comprises a mechanical screw device (27), preferably hydraulically operated, for forwarding and retracting the lubricator means (13, 29, 30) through the injector
- 25 module (12) between an upper position above the injector module and a lower position below the injector module.
- 30 7. A well assembly according to any one of claims 1-6, **characterised in** that the well barrier package (11) comprises an upper well barrier module (11b) arranged below the injector package (5), preferably being a part of the injector package (5).

8. A well assembly according to claim 7, **characterised in** that the well barrier package (11) also comprises a lower well barrier module or package (11a) arranged below the upper well barrier module (11b).
- 5 9. A well assembly according to any one of claims 1-8, **characterised in** that it comprises a remote-controlled coupling device (20), preferably arranged in the interface section between the lubricator package (6) and the injector package (5), for connecting/
10 disconnecting the lubricator means (13, 29, 30) at its upper position, and a corresponding coupling device (21), preferably arranged in the upper well barrier module (11b) for connecting/disconnecting the lubricator means (13, 29, 30) at its lower position.
10. A well assembly according to any one of claims 1-9,
15 **characterised in** that the injector module (12) comprises at least two driving elements (17, 18) by means of and between which the coiled tubing (7), after the retraction of the lubricator means (13, 29, 30) through the injector module (12), is injected into the well (3) or well head (4), the spacing between said driving elements (17, 18) being
20 adjustable so as to engage the driving elements (17, 18) and the coiled tubing (7) during the injecting operation of the injector module (12).
11. A well assembly according to any one of claims 1-10,
25 **characterised in** that the lubricator means (13, 29, 30) comprises a lubricator pipe element (13), a fixed stripper/packer element (29) that is arranged in the upper part or end of the lubricator pipe element (13), and an associated moveable stripper/packer element (30).
- 30 12. A well assembly according to claim 11, **characterised in** that the moveable stripper/packer element (30) is adapted to feed and retract

the coiled tubing (7) together with the tool assembly or toolstring (32) through the lubricator pipe element (13).

13. A well assembly according to claim 11 or 12, **characterised in** that each one of the fixed stripper/packer element (29) and the moveable stripper/packer element (30) is sealingly arranged around the coiled tubing (7) and between itself and the lubricator pipe element (13).

14. A well assembly according to any one of claims 11-13, **characterised in** that said moveable stripper/packer element (30) is adapted to be placed and preferably locked either in an upper position above the injector module (12) by means of coupling device (20), or to the well barrier module (11b) in a lower position below the injector module (12) by means of the coupling device (21).

15. A well assembly according to claims 14, **characterised in** that the moveable stripper/packer element (30) remains in place at and preferably locked to the coupling device (21) of the well barrier module (11b) while the lubricator pipe element (13) is retracted to said upper position.

16. A well assembly according to any one of claims 1-15, **characterised in** that the coiled tubing (7) is connected to a floating vessel (1) that comprises means (37) including a surface injector (38) and an associated coiled tubing reel (39) for feeding out the coiled tubing (7) from the vessel and for retracting the same to the vessel (1).

17. A well assembly according to claim 16, **characterised in** that the coiled tubing is freely extending in the water with a tension defined

by the system between the surface injector (38) and the injector module (5).

18. A well assembly according to any one of claims 1-17,

- 5 **characterised in** that the vessel (1), injector package (5) and the wireline or coiled tubing (7) extending between them form a passive system that permits substantial movement of the vessel (1) in relation to the well head (4).

- 10 19. A method for injecting a wireline or coiled tubing (7) into a subsea well (3) or well head (4), comprising the steps of:

- connecting an injector package (5), comprising an injector module (12) for injecting the wireline or coiled tubing (7) into the well or wellhead, to the well head (4),
- 15 - forwarding lubricator means (13, 29, 30) adapted to be fitted in a lubricator package (6), through the injector module (12) when said packages are connected to each other and the well head,
- connecting said lubricator means (13, 29, 30) defining a locking chamber via which the coiled tubing (7) is forwarded to the well or
- 20 well head, to the well head (4), and
- injecting said wireline or coiled tubing (7) by means of the injector module (12) into the well (3) or well head (4).

20. A method according to claim 19, **characterised in** that

- 25 a well barrier package (11) is connected onto the well head (4).
- said injector package (5) is connected onto the well barrier package (11),
 - said lubricator package (6) is connected onto the injector package (5), and that
 - 30 - said lubricator means (13, 29, 30) is forwarded through the injector module (12) when said packages (11, 5, 6) are connected to each other and to the well head (4).

21. A method according to claim 20, **characterised in** that the wireline or coiled tubing (7) is forwarded through the lubricator means (13, 29, 30) and connected to the well head (4) when the lubricator means (13, 29, 30) has been connected to the well barrier package (11).
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22. A method according to claim 21, **characterised in** that, when the coiled tubing (7) has been connected to the well head (4), the lubricator means (13) is disconnected from the well barrier package (11) and retracted through the injection module (12) such that it is displaced in relation thereto.
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23. A method according to claim 22, **characterised in** that, when the lubricator means (13, 29, 30) has been retracted, the injector module (12) is used for injecting the coiled tubing (7) by means of driving elements (17, 18) into the well (3).
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24. A method according to any one of claims 19-23, **characterised in** that the injector module (12) is also used for retracting the coiled tubing (7) out of the well (3).
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25. A method according to any one of claims 20-24, **characterised in** that the lubricator means (13, 29, 30) is forwarded from its retracted position and connected to the well barrier package (11) before the coiled tubing (7) is disconnected from the well head (4).
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26. A method according to any one of claims 19-25, **characterised in** that the coiled tubing (7) and the lubricator package (6) are removed or disconnected as one single unit or separately from the injector package (5).
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27. A method according to any one of claims 19-26, **characterised in** that the coiled tubing (7) is arranged with a tension defined by the system, extending from a surface injector (38) to the injector module (12).